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Effect of Iraqi propolis on live body weight of Awassi sheep in different age stages

Muneer Wahab Saeed AL-Khafaji

Department of animal resources

Faculty of Agriculture – Kufa University - Republic of Iraq

Abstract:

The study was conducted on 40 Awassi sheep through the year 2014 from the flock reared in Faculty of agriculture / kufa university. Five treatments included levels of propolis (0.0 , 0.005 , 0.01 , 0.02 and 0.03). Live body weight in three ages (6 month , 9 months and 12 months) were evaluated using variance analyses. Results showed a significant effect ($p \leq 0.05$) of propolis and season in live body weight .Highest BW6was showed in the group that fed with 0.03 propolis through the summer season which is about 36.11 kg . BW9 and BW12 were increased significantly ($p \leq 0.05$)) in the same level of propolis. A significant effect ($p \leq 0.05$) of propolis and sex in live body weight was recorded. The highest BW6 , BW9 and BW12 were in the males group that fed with 0.03 propolis which is about kg 41.17 ,55.29 and 65.60 kg respectively compared with the same level of propolis in female group which is about 32.54 , 38.82 and 44.34 kg respectively. . Key words: Awassi sheep ,propolis, body weight

Introduction

Awassi is one of the dual-purpose, fat-tailed sheep breeds which can be accepted as a sheep-milk resource in south-west Asia (Iraq, Jordan, Palestine, Lebanon and Turkey). It also exists in Europe, Australia, New Zealand, and China. The breed is well adapted to harsh conditions and capable of producing and reproducing under these circumstances (5).

Many studies referred that the intake of propolis increases of weight gain, development rate and productivity of different animals. 1 to 10 % propolis in milk is used, the intake bein about 10 ml/kg. Following uses have been described. Weight gain, increased rate of development of animals and productivity improvement of meat quality increased rates of egg laying of hens.(14).

Propolis is the product of resinous, gummy and balsamic substances that are collected by bees from buds, flowers and plant exudates, and mixed with their salivary secretions, wax and pollen. This serves to seal and protect the honeycomb against insect and microorganism attack as well as to maintain internal temperature and humidity (4).

According to Mirzoeva *et al*. (10) propolis has bacteriostatic activity against *some gram*-positive and *gram*-negative bacteria, possibly because of changes in the bioenergetic status of the bacterial membrane, which inhibits bacterial motility. The inhibitory propolis action, *in vitro* and *in vivo*, on the deamination of amino acids was reported by Stradiotti *et al*. (13), which can mean greater ruminal protein escape, with consequent improvement of production efficiency of ruminants.

The major aim of this study was to identified the effect of different levels of propolis in sheep diet in body weight through different ages and use it as a guideline to improve the performance of this animals and increase the efficiency of selection program.

Materials and methods

Experimental Animals and management: Data were made available by the department of animal resources ,Faculty of Agriculture , University of Kufa for the year 2014 on 40 Awassi breed ewes selected from the experimental flock reared under extensive conditions.

Flock is housed under semi-open sheep sheds and can be fed on the concentrated ration consuming about (500 – 600) gm / head / day, for the period from mating season to the last six weeks of pregnancy . Ration is normally containing 37% yellow corn , 40% wheat bran ,10% hulled barley , 5 – 10% soy bean meal ,1% NaCl and 1% CaCO3 .and green roughages such as Alfalfa and clover can be added throughout the season. Annual routinely operations on sheep are dipping and washing with chemicals in order to kill extra parasites so sheep will be ready to mating after hand wool shaving. Sires and dams will be recorded in breed records .Lambs are weighed directly after parturition and tagged with plastic tags . Lambs stays with their dams up to 90 days (weaning age) .The health status of the flock must be under regular observations.

Statistical analysis: The statistical analysis was carried out using SAS program 2009. (Statistical Analysis System) .The animals were distributed in two experiments during summer and winter . Latin Square Design (5×5), with five treatments included levels of propolis (0.0 , 0.005 , 0.01 , 0.02 and 0.03) and six replications. Live body weight in three ages (6 month, 9 months and 12 months) were evaluated using variance analyses. Means were compared using the Duncan multiple range test at a significance level of P = 0.05 according to the following model :

$$Yijk = \mu + Ti + Bj + Sk + eijk$$

Where:

μ : is an overall means .

Ti : Effect of diets contains propolis (0 , 0.01, 0.02 , 0.03 and 0.04).

Bj : Effect of season (winter and summer)

Sk : Effect of sex (male and female).

Eijk : is a random error .

Results and Discussion:

Results represented in Table 1 showed a significant effect ($p \leq 0.05$) of propolis and season in live body weight of Awassi lambs compared with control. The highest BW6 was in the group that fed with 0.03 propolis through the summer season which is about 36.11 kg compared with the same level of propolis through winter (34.43kg) .In addition , BW9 and BW12 were increased significantly ($p \leq 0.05$)) in the same level of propolis compared with the other levels .

Results represented in Table 2 showed a significant effect ($p \leq 0.05$) of propolis and sex in live body weight of Awassi lambs compared with control. The highest BW6 , BW9 and BW12 were in the males group that fed with 0.03 propolis which is about kg 41.17 ,55.29 and 65.60 kg respectively compared with the same level of propolis in female group (32.54 , 38.82 and 44.34kg) respectively. This results were similar with many previous studies. Gubicza and Molner. (6) indicated that using propolis in sheep and cattle improved body weight gain significantly and reduced diarrhoea .Morsy *et.al* (11) reported that using of propolis in sheep diets lead to improving health .Bancova *et.al* .(1) ,Bancova *et.al*. (2) and ,Borcic *et.al* (3) reported that propolis useful as antibacterial and anti fungal .In addition, many studies referred that using of propolis increased fertility and improved the blood criteria. Hudnall(7), Kegl *et. al*. (8) and Tzakoff(15) proved that propolis useful as a stimulant for growth of underdeveloped lambs and calves. Anothor studies found that propolis very active treatment of food and mouth disease and mastitis. (14).

Its can concluded that the uses of propolis in sheep diets lead to improve body weight gain in different ages and the increased in weight can be affected by many factors such as sex or environmental factors such as season.

Table(1) effect of propolis on body weight in different seasons.

Factors		Traits		
Season	Conc.	BW6	BW9	BW12
Summer	0.00	32.34±1.57 a	43.89±3.12 a	44.346±5.106 a
	0.01	39.10±1.70 b	44.83±3.19 a	49.605±5.513 a
	0.02	36.11±1.883	42.39±2.70 a	50.22±3.10 ac
	0.03	43.17±1.31 a	55.29±2.37 b	55.605±3.190 c
	0.04	33.14±1.22 a	48.74±2.41 ab	66.249±3.282 b
Winter	0.00	31.37±1.52 a	39.58±3.08 c	51.379±4.498 ac
	0.01	26.97±1.46 c	32.75±2.64 d	38.119±3.977 d
	0.02	34.43±1.89 a	39.61±3.07 d	43. 44±2.59 d
	0.03	33.94±3.07 a	38.82±3.11 ac	44.346±5.106 a
	0.04	33.90±3.18a	37.96±3.60 b	49.605±5.513 a

Table(2) effect of propolis on body weight in different sex.

Factors		Traits		
Sex	Conc.	BW6	BW9	BW12
Male	0.00	32.34±1.57 a	43.89±3.12 a	44.346±5.106 a
	0.01	39.10±1.70 b	44.83±3.19 a	49.605±5.513 a
	0.02	40.41±1.43b	46.09±2.62 a	51.836±3.477 ac
	0.03	41.17±1.31 a	55.29±2.37 b	65.605±3.190 c
	0.04	33.14±1.22 a	48.74±2.41 ab	56.249±3.282 b
Female	0.00	31.37±1.52 a	39.58±3.08 c	51.379±4.498 ac
	0.01	26.97±1.46 c	32.75±2.64 d	38.119±3.977 d
	0.02	32.48±1.85 a	43.01±5.71 d	43.844±3.561 d
	0.03	32.54±1.57 a	38.82±3.95 ac	44.346±5.106 a
	0.04	33.90±0.98a	47.06±1.60 b	49.605±5.513 a

Means with different superscripts within the same columns differ significantly ($p \leq 0.05$).

BW6:live body weight at 6 month

BW9:live body weight at 9months

BW12:live body weight at 12 months

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تأثير استخدام البروبولس المحلي في وزن الجسم الحي للاغنام العواسية وبمراحل عمرية مختلفة

منير وهاب سعيد الخفاجي

قسم الثروة الحيواني - كلية الزراعة – جامعة الكوفة – جمهورية العراق

المستخلص

أجريت الدراسة على 40 من الاغنام العواسية خلال العام 2014 في حقول قسم الثروة الحيوانية – كلية الزراعة – جامعة الكوفة وتم استخدام خمسة علائق حاوية على مستويات مختلفة من البروبولس المحلي وهي 0.0 0.01 ,0.02 ,0.03. ,0.005 وتم تسجيل الوزن الحي بعمر ستة أشهر وتسعة أشهر وسنة ولكلا الجنسين. أظهرت النتائج وجود تأثير معنوي للبروبولس والموسم في وزن الجسم إذ أعطت المعاملة 0.03 خلال فصل الصيف أعلى وزن عند عمر ستة اشهر اذ بلغ 36.11 كغم . كذلك أظهرت النتائج وجود تأثير معنوي لاظافة البروبولس في العليقة والجنس حيث اعطت الذكور المغذاة على عليقة تحتوي على 0.03 بروبولس وزن حي بحدود (41.17 ، 55.29 و 65.60) كغم عند 6 أشهر و 9 وعمر سنة على التوالي . مقارنة مع نفس التركيز من البروبولس بالنسبة للإناث والتي أعطت وزن حي كان بحدود (32.54 ، 38.82 و 44.34) كغم على التوالي .

كلمات مفتاحية : الاغنام العواسية ، البروبولس ، وزن الجسم